



1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

D3391-021
Job Sheet 168941



Part No: D3391-021

Job Qty: 1 ea

Part Name: Fwd Tube Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 11/27/17

Job Tracking No:

Due Date: 12/8/17

Created By: Marie Lajeunesse

Type: Stock

Description:

Ship Via:

125.00

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
90	Start up Operation	1 Ea	12/7/17	12/7/17	0.00	0.00	Start Up Skidtubes		
100	Skidtubes	1 pcs	12/7/17	12/7/17	0.00	0.82	Skidtubes		
110	CNC Bend Skidtubes	1 pcs	12/7/17	12/7/17	0.00	1.00	CNC Bend Skidtube		
120	QC	1 pcs	12/7/17	12/7/17	0.00	0.00	QC5		
130	CNC Vertical Machining	1 pcs	12/7/17	12/7/17	2.21	1.00	HAAS 1		
140	QC	1 pcs	12/7/17	12/7/17	0.00	0.00	QC2		
150	Mill Conv	1 pcs	12/7/17	12/7/17	0.00	0.27	Mill Conv 1		
160	QC	1 pcs	12/7/17	12/7/17	0.00	0.00	QC2		
170	QC	1 pcs	12/7/17	12/7/17	0.00	0.00	QC8		
180	Skidtubes	1 pcs	12/7/17	12/7/17	0.00	0.82	Skidtubes		
190	QC	1 pcs	12/7/17	12/7/17	0.00	0.00	QC5		
200	HandFinish	1 pcs	12/7/17	12/7/17	0.00	0.33	HandFinish1		
210	QC	1 pcs	12/7/17	12/7/17	0.00	0.00	QC7		
220	Skidtubes	1 pcs	12/7/17	12/7/17	0.00	0.82	Skidtubes		
230	QC	1 pcs	12/7/17	12/7/17	0.00	0.00	QC5		
235	HandFinish	1 pcs	12/7/17	12/7/17	0.00	0.33	HandFinish2		
240	Spray Paint	1 pcs	12/7/17	12/7/17	0.00	0.99	Spray Paint		
250	QC	1 pcs	12/7/17	12/7/17	0.00	0.00	QC14		
254	HandFinish	1 pcs	12/8/17	12/8/17	0.00	0.33	HandFinish4		
256	QC	1 pcs	12/8/17	12/8/17	0.00	0.00	QC5		
260	Packaging	1 pcs	12/8/17	12/8/17	0.00	0.00	Packaging3		
280	QC21-SA	1 Ea	12/8/17	12/8/17	0.00	0.00	QC21		

Part Op 100 - Cut as per dwg.

Descriptions: 110 - Bend as per Dwg D3391 Using Bend Prog 3391021

130 - 1-Machine as per Folio FA590 Rev. AA & Dwg D3391 Rev. J

150 - Drill X1 Aft cap as per Dwg D3391 .1875" dia

180 - 1-Drill Remaining two holes for tow cap using DT 8819 Locating off of .1875" holes drilled in previous step 2-Drill float bag holes as per Dwg D3391 using DT8798(Do not open tow cap holes to finish size) (ONLY DRILL HOLES MARKED "A") 6-Deburr & Scribe Batch number Inside aft end. 7-Transfer drill D3391-021 with D3391-023

220 - 1-instal spacers as per dwg D3391 A/R Magnabond 6398 batch: M137073 exp. date: 02/01/2018 cure time 12hrs. as per QSI015 2- grind crossbolt flush 3-back drill crossbolt if necessary

235 - AND REALODINE AS PER QSI 005

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
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WORK ORDER NON-CONFORMANCE

Work Order: _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	Skid-tube
Part No. _____		Machining
NCR No. _____		Thermoforming
		Large Fab

Description Work Order Deviation

Root Cause									
Environment		No Re-verification		Pressure/Forced		Temperature/Cur			
Design		Operator		Bending		Set-up			
Doc/Data		Offset/Setup		Centre Not Concentric		BOM/Route			
Equip/Tooling		Supplier		Cracks		Broken/Damage/			
Handling/Pre		Training		Crimp/Kink/Ripple/Wave		Inspection Incom			
Material		Use for Testing		Cuffs		Contamination			
Internal Transport		Poor Information		Crushing		Countersink			
Tribal Knowledge		Rushing		Heat Treat		Cut Too Short			
LOA		Product Improvement		Wave/Twist in Tube		Instructions Incomplete/Unclear			
Substation		Process Improvement		Marks/Chatter		Drill Holes			
Past Expiry Date		Manufacturing Process							
Misidentified		Past Due		OTHER :					

Aerospace Ltd.
 17000 Aerobeen Street
 Brampton, ON K6A 1K7
 Tel: 905.882.6322
 Fax: 905.882.6320
 Email: sales@aerospaceltd.com
 Website: www.aerospaceltd.com

H:/FORMS/Quality Assurance\approved QA/NCRWO Rev I



2ART
AEROSPACE
\$017086



Fwd Tube Assembly

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartae.ro.com
www.dartaerospace.com

PART NO: D3391-021
Revision:
Operation: Start up Opera
Change No:

Mfg Date: 12/04/17
Job No: 168941

Start up Operation

90-Start up Operation
220-Skidtubes
254-HandFinish

D6013-047 B86064 1
D3670-4-200 3021404 4
AELS-1032-225 5007280 10
AN3C4A 5019394 10
D3401-041 F155510 1
D3672-1 F150074 4
D4095-051 M159902-127 1
NAS1149C0332R 50193801 10

63	0	0
78	0	0
0	0	0
993	0	0
11	0	0
1,741	0	0
40	0	0
3,161	0	0

Part Specifications

Specifications could not be found.

000571

Plex 11/27/17 11:26 AM Dart.lajeunesse.marie

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
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OTHER : _____					

INSTALL D3670-4200 SPACER
SEAL WITH MAGNOBOND 6398
GRIND FLUSH
PRIOR TO PAINTING
4 PL

DETAIL B



INSTALL
AELS-1032-225
AFTER FINISH
10 PL

D4095-051
WEARSHOE

AN3C4A BOLT
NAS1149C0332R WASHER
6 PL

D3391-021 FWD TUBE ASSEMBLY ASSEMBLY DETAIL

SEAL WITH
SIKAFLEX-241/-291

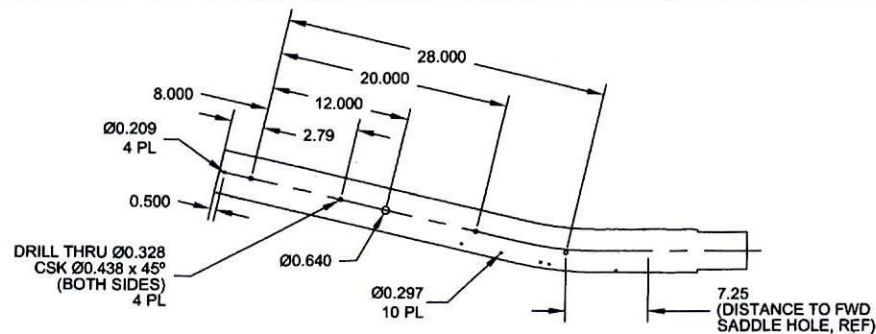
D3401-041
TOW CAP

AN3C4A BOLT
D3672-1 WASHER
NAS1149C0332R WASHER
4 PL

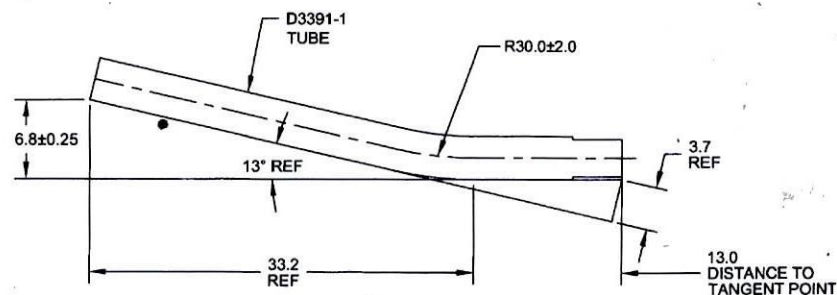
DETAIL B SCALE 2X

D3391-021 FWD TUBE ASSEMBLY PARTS LIST

QTY	PART NUMBER	DESCRIPTION
X	D3391-021	FWD TUBE ASSEMBLY
1	D3391-1	TUBE
1	D3401-041	TOW CAP
4	D3670-4200	SPACER
4	D3672-1	WASHER
1	D4095-051	WEARSHOE
10	AELS-1032-225	INSERT
10	AN3C4A	BOLT
10	NAS1149C0332R	WASHER



D3391-021 DRILLING DETAIL



D3391-021 BENDING DETAIL (MAKE FROM D3391-1)

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 168941 M05
1711-27

RELEASED
2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	TS	D3391	SHEET 4 OF 11
APPROVED	CS	TITLE	SCALE
DE APPR.	TH	412 FLOAT SKIDTUBE	NTS
DATE	16.01.14	COPYRIGHT © 2005 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

DQA: _____ Date: _____

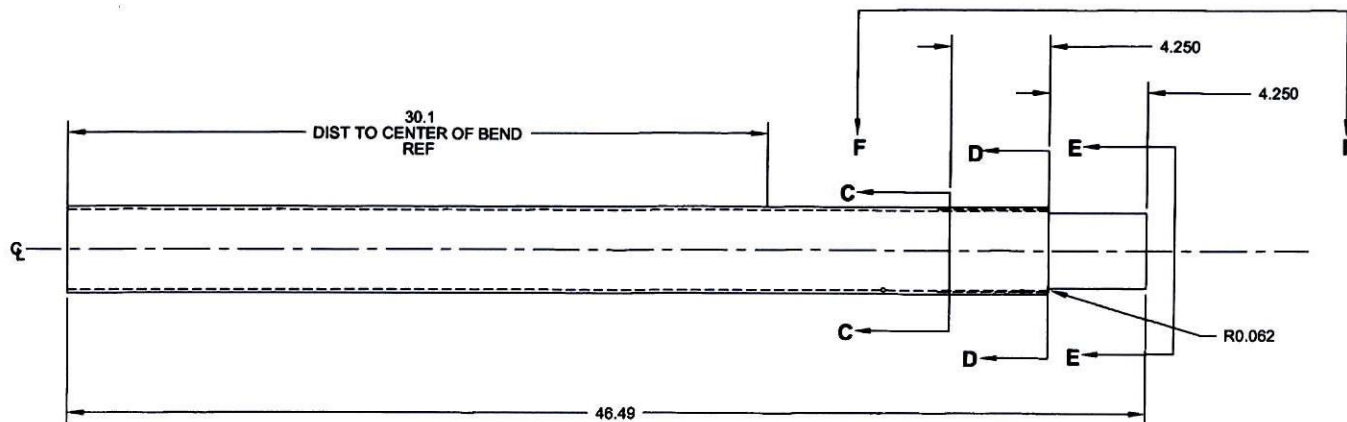


WORK ORDER NON-CONFORMANCE / UPDATE

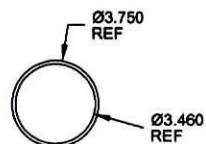
QA Closed: _____ Date: _____

Work Order update only ☐

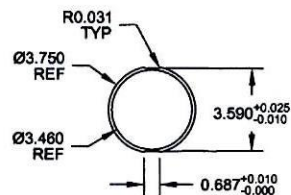
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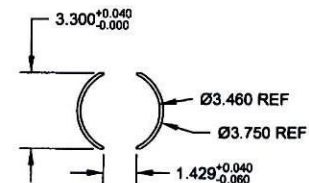
D3391-1 TUBE
(MAKE FROM D6013-047 SKIDTUBE MATERIAL)



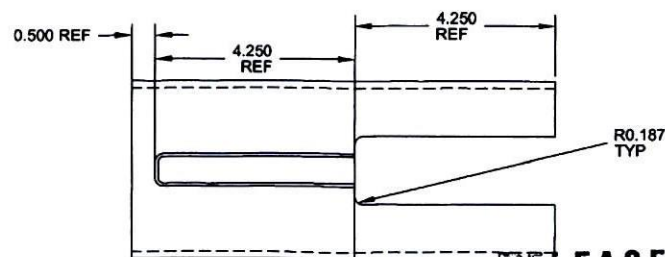
SECTION C-C



SECTION D-D



SECTION E-E



VIEW F-F
SCALE 2X

RELEASED
2016-04-28

DESIGN	PH	DART AEROSPACE USA, INC	
DRAWN	ML	EUGENE, OR	
CHECKED	CP	DRAWING NO.	REV. J
MFG. APPR.	<i>22</i>	D3391	SHEET 5 OF 11
APPROVED	<i>[Signature]</i>	TITLE	SCALE
DE APPR.	<i>[Signature]</i>	412 FLOAT SKIDTUBE	NTS
DATE	16.01.14	COPYRIGHT © 2005 BY DART AEROSPACE USA, INC THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION THROUGHOUT AEROSPACE USA, INC.	

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐	No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐	Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐	Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐
OTHER : _____					



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO038933

Supplier: ATE003-VC
Atelier Debosselage
358 Principale
Calumet
QC
J0V 1B0 Canada
Phone: 819 242 5633

PO No: PO038933
PO Date: 2/2/18
Due Date: 2/5/18
**Purchase Order
Revision:**
Revision Date:
Ship-To Contact: Baker, Diane
Phone: dbaker@dartaero.com

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

Via: Ground
Pymt Terms: Net 30
Freight Terms:
Special Comments:

Items

Line Item	Job	Part	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
1	168941	D3391-021	Fwd Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$125.00/pcs AT 18/02/06	\$125.00
2	168617-A	D3391-021	Fwd Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
3	168760-A	D3391-021	Fwd Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$125.00/pcs 18/02/02 mdf	\$125.00
4	168619-B	D3391-023	Mid Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
5	168761-A	D3391-023	Mid Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$125.00/pcs 18/02/02 mdf	\$125.00
6	168761	D3391-023	Mid Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$125.00/pcs AT 18/02/06	\$125.00
7	168621-C	D3391-025	Aft Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$125.00/pcs AT 18/02/06	\$125.00
8	168621-A	D3391-025	Aft Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs	1 pcs	\$125.00/pcs	\$125.00
9	168621-B	D3391-025	Aft Tube Assembly	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$125.00/pcs 18/02/02 mdf	\$125.00
10	169228-B	D350-636-011	Skidtube LH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs AT 18/02/06	\$225.00
11	169228	D350-636-011	Skidtube LH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs 18/02/02 mdf	\$225.00
12	169856	D350-636-011	Skidtube LH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs 18/02/02 mdf	\$225.00
13	167569	D350-636-012	Skidtube RH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs AT 18/02/06	\$225.00
14	167568-A	D350-636-012	Skidtube RH, Std Wearplates, DART (Apical) Cylindrical/Aerazur Float	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs AT 18/02/06	\$225.00



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PURCHASE ORDER PO038933

Items

Line Item	Job	Part	Description	Status	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (CAD)	Extended Price
			Comp.							
✓ 15	167302-B	D350-636-015	Skidtube LH, Run-on Landing Wearplates, DART(Apical) Cylind./Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs 18/02/02	\$225.00 ms
✓ 16	167302	D350-636-015	Skidtube LH, Run-on Landing Wearplates, DART(Apical) Cylind./Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs At 18/02/06	\$225.00
✓ 17	167339	D350-636-016	Skidtube RH, Run-on Landing Wearplates, DART(Apical) Cylind./Aerazur Float Comp.	Firmed	2/5/18	1 pcs	0 pcs 1x	1 pcs	\$225.00/pcs 18/02/02	\$225.00 ms
Grand Total:									\$2,925.00	

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 2/2/18 10:21 AM dart.baker.diane